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Westman, Champlin & Kelly

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Kumar et al.

Applic No.: 09/136,483

Filed : August 19, 1998

For : ALUMINUM OXIDE PARTICLES

Docket No.: N19.12-0016

Group Art Unit:
1755Examiner: M.
Marcheschi

DECLARATION UNDER 37 C.F.R. §1.132

BOX AF
Assistant Commissioner for Patents
Washington, D.C. 20231I HEREBY CERTIFY THAT THIS PAPER IS
BEING SENT BY U.S. MAIL, FIRST
CLASS, TO THE ASSISTANT
COMMISSIONER FOR PATENTS,
WASHINGTON, D.C. 20231. THIS01 DAY OF May 2000
Robert S. Dandi
PATENT ATTORNEY

I, Nobuyuki Kambe, hereby declare as follows:

1. I am presently Vice President, Market Development at NanoGram Corporation.
2. I am a founder of NanoGram Corporation, and I have been a Vice President at NanoGram since it was founded in 1996. I have a Bachelor of Science degree and a Master of Science degree in Instrumentation Engineering from Keio University and a Ph.D. in Electrical Engineering from Massachusetts Institute of Technology in 1982.
3. Prior to my employment at NanoGram, I was Senior Managing Director with the International Center for Materials Research (ICMR), a consortium of prominent Japanese companies working jointly on the development of advanced materials. My duties at ICMR included instituting a research and development program in functional polymers and a research and a program in nanoparticles, which was the predecessor of NanoGram. Prior to working with ICMR, I held several positions with Nippon Telephone and Telegraph including Senior Research Scientist and Senior Manager.

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4. I have considerable experience in advanced materials research and in particular on nanoparticles and nanomaterials. During my employment with NanoGram, I have worked closely with materials development at NanoGram, and I have also worked extensively with outside companies, consultants and academic researchers toward the development of particular markets and new areas for research related to nanoparticles.

5. I am very familiar with various approaches for producing nanoscale particles, characterization of these particles and the public availability of nanoscale particles with various properties. A successful founder of a technology driven company working in the area of nanoparticles is required to have such knowledge.

6. I am an inventor on the above referenced patent application.

7. I have read all of the references cited by the patent Examiner in the Office Action mailed on February 29, 2000. None of the particle synthesis approaches described in these references is capable of producing nanoparticles having the narrow particle size distribution of the claims pending in the present patent application. Furthermore, I am aware of no approaches that are available to separate nanoscale particles having an average particle size less than about 500 nm to produce a collection of particles with the claimed narrow particle size distribution. In addition, since the approaches described in the cited patents are not capable of producing nanoparticles with narrow particle size distributions, a person of ordinary skill in the art would not have thought, as of our filing date, that the claimed collections of particle would be obvious over the disclosure provided in these references.

8. I am aware of no methods other than the process described in our above noted patent application for producing aluminum oxide nanoparticles having an average particle size less than about 500 nm with the narrow particle size distributions specified in our

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pending claims.

9. I declare that all statements made herein that are of my own knowledge are true and that all statements that are made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Date: May 1, 2000

By: Nobuyuki Kambe
Nobuyuki Kambe, Ph.D.

TOTAL P.15

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NOBUYUKI KAMBE

840 Hobart Avenue
Menlo Park, CA 94025 USA
Tel. 1-650-322-6832
E-mail kambe@nanogram.com

EDUCATION

1976 - 1982 Massachusetts Institute of Technology Cambridge, MA
Doctor of Philosophy in Electrical Engineering

- Dissertation in graphite intercalation materials and their structural behavior
- Visiting researcher at National Magnet Laboratory

1974 - 1976 Keio University Tokyo, Japan
Master of Science, Instrumentation Engineering

- Observation of novel phase transition in ultra-thin Au film over C film

1970 - 1974 Keio University Tokyo, Japan
Bachelor of Science, Instrumentation Engineering

- Percolation model over the surface of insulators

PROFESSIONAL EXPERIENCE

1996 - Present NanoGram Corporation Fremont, CA
Vice President, Market Development

- Identification, development and planning of new business opportunities for NanoGram particles

1994 - 1996 International Center for Materials Research Kawasaki, Japan
Senior Managing Director

- Creation of functional polymer R&D
- Creation of nanoparticle R&D at Lexington, KY as precursor of NanoGram

1981 - 1994 Nippon Telegraph & Telephone (NTT) Tokyo, Japan
1991 - 1994 Senior Manager at Corporate HQ

- Strategic corporate planning of new businesses for all NTT technologies
- Completion of technology management course at Japan Productivity Ctr.

1989 - 1991 Senior Research Scientist and Supervisor at Basic Res. Lab.

- Nonlinear optical materials: synthesis, MBE (molecular beam epitaxy) machine build-up, nonlinear optics measurements
- NTT Basic Res. Lab. Director Award

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1984 - 1989 Staff Research Scientist

- Semiconductor superlattice laser devices: GaAs & GaSb-type, device fabrication process development
- Layered semiconductors: GaSe & InSe-type, synthesis, MBE, electron diffraction and spectroscopy, TEM
- Total renovation of high-power x-ray lab: planning and completion of 4 rotor-flex machine facility

1982 - 1989 Research Scientist

- Photosensitive materials: synthesis, optical characterization, nonlinear optical measurements

PATENTS AND PUBLICATIONS

Research interests include electronic and optical properties of low dimensional materials, graphite intercalation compounds, MBE-grown semiconductor thin films and new functional polymers and nanoparticle ceramics.

Ten (10) patents in nanomaterials.

Author of twenty publications and three books.

LANGUAGES

Japanese (mother tongue)

English (fluent)

REFERENCES

- Prof. Millie Dresselhaus, Institute Professor at MIT [617-253-6864]
 - Mr. William Hecht, CEO at MIT Alumni Association [617-253-8204]
 - Dr. Noriyoshi Osumi, VP at NTT America [650-903-0660]
 - Dr. Rikuo Takano, Executive Director at Mitsubishi Materials [011-81-422-72-2435]
 - Dr. Tatsuo Izawa, Executive Director at NTT [011-81-462-40-5000]
 - Dr. Tomoaki Yamada, Fellow at NTT Basic Res. Lab. [011-81-462-40-3350]
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